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Face Selectivity in Social (But Not Perceptual) Areas of the Infant Brain

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Abstract

Humans are profoundly social creatures. We depend on others for survival and crave social interactions. Faces are the gateway to many typical social interactions. One of the most replicable results in cognitive neuroscience is the selective response of some cortical regions to faces in humans and other social primates. Specifically, the fusiform face area (FFA) is a region in the ventral temporal cortex (VTC) that is selectively responsive to faces. To determine whether infants show early cortical responses to faces, we recruited 86 human infants (2.1-11.9 months) to participate in an awake infant functional resonance imaging (fMRI) experiment. We obtained usable fMRI data from 49 infants (2.1-9.7 months) while they watched videos of faces, bodies, objects, and scenes, 30 of whom (2.5-9.4 months) had enough data for a functional region of interest (fROI) analysis. A group random effects analysis revealed significantly higher responses to faces than objects in the medial prefrontal cortex (MPFC), superior temporal sulcus (STS), ventral temporal cortex (VTC), and subcortical areas of the infant brain. Additionally, the fROI analysis revealed face selective responses in the STS, MPFC, and VTC but not lateral occipital cortex or subcortical areas of the infant brain. Thus, we provide the first evidence of face selective responses in the infant brain and demonstrate that social regions (STS and MPFC) respond selectively at the same time as perceptual regions (VTC).